

Listing of Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application.

1. (Currently amended) An optical actuator assembly comprising:
a solid light-absorbing and expanding member having a core being surrounded by a an
internal partially absorbing and partially reflecting interior cladding, said core and
said cladding forming an interior volume eavity; and
a waveguide for directing optical energy into said ~~partially absorbing and partially reflecting~~
interior volume eavity, said light-absorbing and expanding member expanding in
response to light impinging thereon and thereby resulting in displacement of said
~~light-actuated actuator~~ solid light-absorbing and expanding member to a
displacement distance.
2. (Currently amended) The optical actuator of claim 1, wherein said core has a longitudinal
axis, An optical actuator comprising: a solid light absorbing and expanding member having an
internal partially absorbing and partially reflecting cavity having a longitudinal access; and a
waveguide for directing optical energy into said partially absorbing and partially reflecting cavity;
said solid light-absorbing and expanding member ~~actuator~~ being displaced to a displacement
distance along said longitudinal access, said displacement distance being proportional to the power
of said optical energy.
3. (Currently amended) The optical actuator of claim 1, wherein said interior volume is a
closed volume. ~~partially absorbing and partially reflecting cavity is a closed cavity.~~
4. (Currently amended) An optical actuator comprising:
an outer containing member having an interior cladding; and
a core eavity within said interior cladding, ~~containing member~~ said core , said cavity having
a longitudinal axis and containing a light-absorbing and expanding material selected
from the group consisting of liquids, gels, and solids, and ~~polymers~~; said light-

absorbing and expanding material expanding in response to light impinging thereon and thereby resulting in displacement of said outer containing member ~~light-actuated actuator~~ to a displacement distance in the direction of said longitudinal axis.

5. (Currently amended) The optical actuator of claim 4, wherein said outer containing member is comprised of a material selected from the group consisting of metals, semiconductors, and dielectric material such as glass.
6. (Currently amended) The optical actuator of claim 4, wherein said displacement distance is proportional to the power of said light impinging on said light-absorbing and expanding material.
7. (Original) An optical actuator comprising:
 - a first light-absorbing and expanding member comprising a first outer portion and a first cavity having a first longitudinal axis;
 - a second light-absorbing and expanding member comprising a second outer portion and a second cavity having a second longitudinal axis approximately parallel to said first longitudinal axis;wherein absorption of light by one of said first light-absorbing cavity and said second light-absorbing cavity causes displacement of at least a portion of said optical actuator to a displacement distance in a direction approximately perpendicular to said first longitudinal axis and said second longitudinal axis.
8. (Original) The optical actuator of claim 7 wherein at least one of said first and second cavities is empty.
9. (Original) The optical actuator of claim 7 wherein at least one of said first and second cavities is filled with a material selected from the group consisting of liquids and polymers.

10. (Original) The optical actuator of claim 7 wherein said displacement distance is proportional to the power of said light absorbed by one of said first and second light-absorbing cavities.

11. (Original) The optical actuator of claim 7 wherein thermal changes in an environment of said optical actuator cause substantially no displacement of said optical actuator in a direction approximately perpendicular to said first longitudinal axis and said second longitudinal axis.

12. (Original) The optical actuator of claim 7 further comprising a first filter for filtering light input into said first light-absorbing and expanding member and a second filter for filtering light input into said second light-absorbing and expanding member, said filters allowing for controlled actuation of one or both of said first and second light-absorbing and expanding members via the input of multiple colors of light from a single light pathway.

13. (Original) The optical actuator of claim 12 wherein said single light pathway is a fiber optic cable.

14. (Original) The optical actuator of claim 12 wherein said single light pathway is an optical waveguide.

15. (Currently amended) An optical actuator comprising:
a first light-absorbing and expanding member comprising a first outer portion and a first cavity having a first longitudinal axis;
a second light-absorbing and expanding member comprising a second outer portion and a second cavity having a second longitudinal axis approximately parallel to said first longitudinal axis;
a third light-absorbing and expanding member comprising a third outer portion and a third cavity having a third longitudinal axis approximately parallel to said first longitudinal axis; and

a fourth light-absorbing and expanding member comprising a fourth outer portion and a fourth cavity having a ~~third~~ fourth longitudinal axis approximately parallel to said first longitudinal axis;

said first, second, third, and fourth light-absorbing and expanding members being approximately symmetrical and absorption of light at one or more of said first, second, third, and fourth light-absorbing members causes displacement of at least a portion of said optical actuator to a displacement distance in a direction approximately perpendicular to said first longitudinal axis.

16. (Original) The optical actuator of claim 15 wherein thermal changes in an environment of said optical actuator cause substantially no displacement of said optical actuator in a direction approximately perpendicular to said first longitudinal axis and said second longitudinal axis.

17. (Original) The optical actuator of claim 15 wherein said displacement distance is proportional to the optical power of said light absorbed at one or more of said light-absorbing members.

18. (Original) The optical actuator of claim 15 wherein said light-absorbing and expanding members are interconnected in a rigid frame and light input into two or more of said light-absorbing and expanding members allows for two-dimensional displacement of said optical actuator in directions approximately perpendicular to said first longitudinal axis.

19. (Original) The optical actuator of claim 15 further comprising:

a first filter for filtering light input into said first light-absorbing and expanding member;

a second filter for filtering light input into said second light-absorbing and expanding member;

a third filter for filtering light input into said third light-absorbing and expanding member;
and

a fourth filter for filtering light input into said fourth light-absorbing and expanding member;

said filters allowing for controlled actuation of one or both of said first and second light-absorbing and expanding members via the input of multiple colors of light from a single light pathway.

20. (Original) The optical actuator of claim 19 wherein said single light pathway is a fiber optic cable.

21. (Original) The optical actuator of claim 19 wherein said single light pathway is an optical waveguide.

22–34. (Canceled)

35. (New) The optical actuator of claim 7, wherein at least one of said first light-absorbing and expanding member and said second light-absorbing and expanding member is comprised of a material selected from the group consisting of metals, semiconductors, and dielectric material such as glass.

36. (New) The optical actuator of claim 15, wherein at least one of said first light-absorbing and expanding member, said second light-absorbing and expanding member, said third light-absorbing and expanding member, and said fourth light-absorbing and expanding member is comprised of a material selected from the group consisting of metals, semiconductors, and dielectric material such as glass.

37. (New) An optical actuator comprising:
a solid member having an internal cavity defined in part by an open end and a closed end,
said solid member receiving light of a plurality of wavelengths via said open end;
an internal cladding surrounding at least a portion of said internal cavity, said internal cladding being partially absorbing and partially reflecting, said internal cladding redirecting scattered light of said light for absorption; and

an internal material located in said internal cavity, said internal material being light-absorbing and expanding, said internal material expanding in response to said light impinging thereon and thereby resulting in displacement of said solid member to a displacement distance.